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43
44. (New) The nanocrystallite of claim 12, wherein the core is a member of a population having a size distribution with a standard deviation no greater than 10% of a mean diameter of the population.--

16 44
45. (New) The nanocrystallite of claim 12, wherein the core is a member of a population having a size distribution with a standard deviation no greater than 5% of a mean diameter of the population.--

17 45
46. (New) A nanocrystallite comprising
a nanocrystalline core comprising MTe
wherein M is selected from the group consisting of Cd, Zn, Mg, and Hg, and
an overcoating of a semiconductor material on a surface of the core wherein the
core photoluminesces at a wavelength in the range of 435 to 800 nm.--

18 46
47. (New) The nanocrystallite of claim 46 wherein the core comprises CdTe.--

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48. (New) The nanocrystallite of claim 46, wherein the core is a member of a population having a size distribution with a standard deviation no greater than 10% of a mean diameter of the population.--

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49. (New) The nanocrystallite of claim 46, wherein the core is a member of a population having a size distribution with a standard deviation no greater than 5% of a mean diameter of the population.--

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50. (New) The nanocrystallite of claim 46, wherein the overcoating comprises ZnS.--

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51. (New)) The nanocrystallite of claim 46, wherein the overcoating comprises ZnSe.--

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52. (New) The nanocrystallite of claim 46, wherein the overcoating comprises CdSe.--

24⁵²--~~53~~. (New) The nanocrystallite of claim ~~46~~¹⁷₄₅, wherein the nanocrystallite photoluminesces with a quantum efficiency of at least 20%.--

25⁵³--~~54~~. (New) The nanocrystallite of claim ~~46~~¹⁷₄₅, wherein the nanocrystallite photoluminesces with a quantum efficiency of at least 40%.--

26⁵⁴--~~55~~. (New) The nanocrystallite of claim ~~46~~¹⁷₄₅, wherein the nanocrystallite photoluminesces with a quantum efficiency of at least 60%.--

27⁵⁵--~~56~~. (New) The nanocrystallite comprising
a nanocrystalline core comprising MTe
wherein M is selected from the group consisting of Cd, Zn, Mg, and Hg, and
an overcoating of a semiconductor material on a surface of the core wherein the core
photoluminesces with a full-width at half maximum (FWHM) of 70 nm or less.--

28⁵⁶--~~57~~. (New) The nanocrystallite according to claim ~~56~~²⁷₅₅, wherein the FWHM is 45 nm or less.--

29⁵⁷--~~58~~. (New) The nanocrystallite according to claim ~~56~~²⁷₅₅, wherein the FWHM is 20 nm or less.--

30⁵⁸--~~59~~. (New) The nanocrystallite according to claim ~~56~~²⁷₅₅, wherein the FWHM is 15 nm or less.--

31⁵⁹--~~60~~. (New) The nanocrystallite of claim ~~56~~²⁷₅₅, wherein the core is a member of a population having a size distribution with a standard deviation no greater than 10% of a mean diameter of the population.--

32⁶⁰--~~61~~. (New) The nanocrystallite of claim ~~56~~²⁷₅₅, wherein the core is a member of a population having a size distribution with a standard deviation no greater than 5% of a mean diameter of the population.--

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⁶¹
~~33-62~~ (New) The nanocrystallite of claim ²⁷~~56~~, wherein the nanocrystallite
photoluminesces with a quantum efficiency of at least 20%.--

⁶²
~~34-63~~ (New) The nanocrystallite of claim ²⁷~~56~~ wherein the core comprises CdTe.--